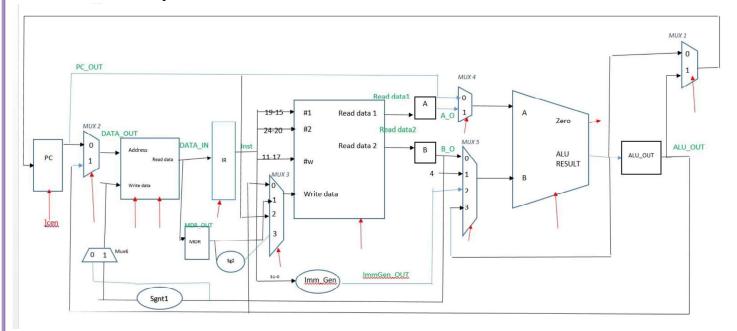
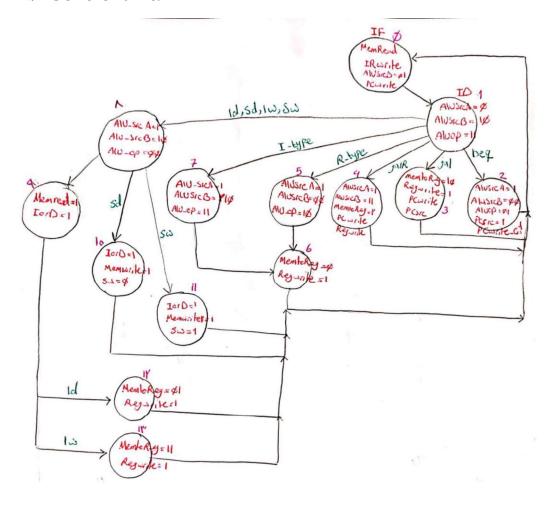
Data path:



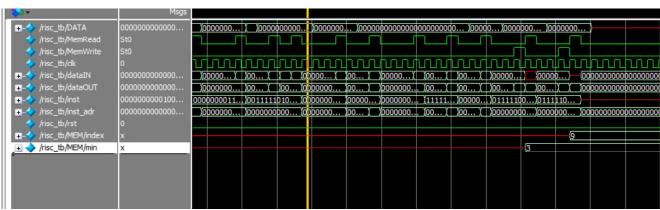
Control unit:



Simulations:

Case I:

```
= 64'd8;
           1/0
= 64'dlll; //1
         1/2
= 64'dl1;
          //3
= 64'd5;
= 64'd4;
          1/4
= 64'd5;
          //5
= 64'd6;
          1/6
= 64'd7;
          1/7
= 64'd7;
          //8
           1/9
= 64'd3;
= 64'd101;
           //10
= 64'dl1;
           //11
= 64'd12;
          //12
= 64'd13;
          //13
= 64'd5;
          //14
         //15
= 64'd14;
          //16
= 64'd14;
          //17
= 64'dl1;
= 64'd11;
          //18
= 64'dl1; //19
```



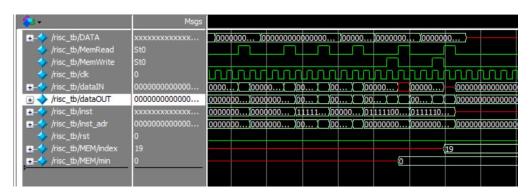
Case II:

```
64'd8;
         110
64'dlll; //1
64'dl1;
         1/2
64'd5;
         //3
64'd4;
         1/4
64'd5;
         //5
64'd6;
        1/6
64'd7;
        1/7
64'd7;
         //8
         1/9
64'd3;
64'd101; //10
64'dl1;
        //11
64'd12;
        //12
-64'd128; //13
       //14
64'd5;
64'd14;
        //15
        //16
64'd14;
64'dll; //17
64'dl1;
        //18
64'dll; //19
```



Case III:

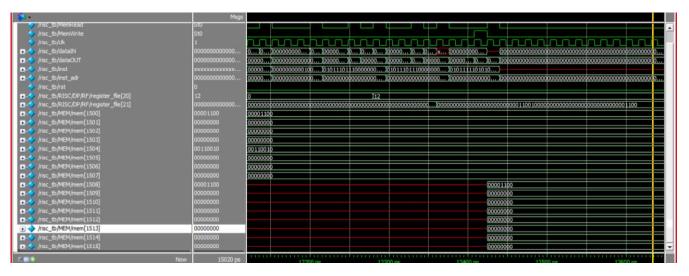
```
= 64'd8;
            1/0
= 64'dll1; //1
= 64'dll;
= 64'd5;
            //3
= 64'd4;
           1/4
            //5
= 64'd5;
= 64'd6;
           1/6
= 64'd7;
           1/7
            //8
= 64'd7;
= 64'd3;
            1/9
= 64'd101;
            //10
= 64'dll;
            //11
= 64'd12;
           //12
= 64'd13;
           //13
= 64'd5;
           //14
= 64'd14;
           //15
= 64'd14;
           //16
= 64'dll;
           //17
= 64'dl1;
           //18
= 64'd0; //19
```



Testing other commands:

```
jal X1, TEST
                                  68
// RETURTN: sll R17, R3, R2
                                  72
             srl R18, R3, R2
             1w R20, 1500 (R0)
                                  80
11
            1d R21, 1500 (R0)
           sw R21, 1504(R0)
sub R9,R3,R2
            or R12, R3, R2
11
            and R14, R3, R2
                                  128
11
            slti R15, R2, 20
                                 132
            jalr R16 RETURN(R2) 136
```

LW,SW:



SLTI,JAL,JALR:

